Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (currently amended) A method for forming a spin-valve type abutted junction GMR sensor element with a thinner hard magnetic longitudinal bias layer having significantly improved magnetic properties in the junction region comprising:

providing a substrate;

forming over said substrate a first seed layer for [[the]] <u>said</u> spin-valve GMR sensor element;

forming over said first seed layer [[a]] <u>said</u> spin-valve GMR sensor element;

etching said spin-valve GMR sensor element and said first seed layer to produce surfaces for abutted junctions<u>, said surfaces including substantially vertical lateral edge surfaces on said sensor element and horizontal projections on said first seed layer</u>;

forming over said surfaces for abutted junctions a lattice matching second seed layer for [[the]] <u>said</u> hard magnetic <u>longitudinal</u> bias layer, said second seed layer covering all of said surfaces;

forming over said lattice matching seed layer [[a]] <u>said</u> hard magnetic longitudinal bias layer, an undersurface of said bias layer contacting only the second seed layer;

forming over said hard magnetic longitudinal bias layer a conducting lead layer.

2.(previously presented) The method of claim 1 wherein the first seed layer for the spin-valve GMR sensor element is a layer of material chosen from the group consisting of NiCr and NiFeCr, and is formed to a thickness of between 15 Angstroms and 200 Angstroms.

3.(previously presented) The method of claim 1 wherein the first seed layer for the spin-valve GMR sensor element is a layer of Ta, and is formed to a thickness of between 15 Angstroms and 200 Angstroms.

4.(previously presented) The method of claim 2 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer comprises a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn, formed on a Ta underlayer, the Ta being formed to a thickness of between 10 Angstroms and 200 Angstroms, and the CrX being formed to a thickness of between 15 Angstroms and 200 Angstroms.

5.(previously presented) The method of claim 3 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer is a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn and the CrX being formed to a thickness of between15 Angstroms and 200 Angstroms

6.(original) The method of claim 1 wherein the hard magnetic longitudinal bias layer is a layer of CoY, wherein Y is chosen from the group consisting of CrPt, Pt, and CrTa alloy, and is formed to a thickness of between 50 Angstroms and 1000 Angstroms.

7.(original) The method of claim 1 wherein the conducting lead layer is a layer of Ta/Au/Ta and is formed to a thickness of between 100 Angstroms and 1650 Angstroms.

8.(currently amended) A spin-valve type abutted junction GMR sensor element with a thinner hard magnetic longitudinal bias layer having significantly improved magnetic properties in the junction region comprising:

a substrate;

a first seed layer for [[the]] said spin-valve GMR sensor element formed over said substrate;

[[a]] said spin-valve GMR sensor element formed over said first seed layer;

surfaces for abutted junctions etched into said spin-valve GMR sensor element and said first seed layer, said surfaces including substantially vertical lateral edge surfaces on said sensor element and horizontal projections on said first seed layer;

a lattice matching second seed layer for [[a]] said hard magnetic longitudinal bias layer formed over said surfaces for abutted junctions, said second seed layer completely covering said surfaces;

[[a]] said hard magnetic longitudinal bias layer formed over said lattice matching second seed layer, an undersurface of said bias layer contacting only said second seed layer;

a conducting lead layer formed over said hard magnetic <u>longitudinal</u> bias layer.

9.(previously presented) The sensor element of claim 8 wherein the first seed layer for the spin-valve GMR sensor element is a layer of material chosen from the group consisting of NiCr and NiFeCr, and is formed to a thickness of between 15 Angstroms and 200 Angstroms.

10.(previously presented) The sensor element of claim 8 wherein the first seed layer for the spin-valve GMR sensor element is a layer of Ta, and is formed to a thickness of between15 Angstroms and 200 Angstroms.

11.(previously presented) The sensor element of claim 9 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer comprises a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn, formed on a Ta underlayer, the Ta being formed to a thickness of between 10 Angstroms and 200 Angstroms, and the CrX being formed to a thickness of between 15 Angstroms and 200 Angstroms.

12. (previously presented) The sensor element of claim 10 wherein the lattice matching second seed layer for the hard magnetic longitudinal bias layer is a layer of CrX, X being chosen from the group consisting of Ti, W, Mo, V, and Mn and the CrX being formed to a thickness of between15 Angstroms and 200 Angstroms.

13.(previously presented) The sensor element of claim 8 wherein the hard magnetic longitudinal bias layer is a layer of CoY, wherein Y is chosen from the group consisting of CrPt, Pt, and CrTa alloy, and is formed to a thickness of between 50 Angstroms and 1000 Angstroms.

14.(previously presented) The sensor element of claim 8 wherein the conducting lead layer is a layer of Ta/Au/Ta and is formed to a thickness of between 100 Angstroms and 1650 Angstroms.